



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,785	03/15/2004	Ye-Mon Chen	TH-2639 (US)	9202
7590 Richard F. Lemuth Shell Oil Company Legal - Intellectual Property P.O. Box 2463 Houston, TX 77252-2463		06/14/2007	EXAMINER BOYER, RANDY	
			ART UNIT 1764	PAPER NUMBER
			MAIL DATE 06/14/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/800,785	Applicant(s) CHEN ET AL.	
	Examiner Randy Boyer	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) 16 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 15 is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-16 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>See Continuation Sheet</u> | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :15 March 2004 and 18 July 2005 .

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-14, drawn to a nozzle assembly, classified in class 239, subclass 548.
 - II. Claim 15, drawn to an apparatus for contacting a catalyst and hydrocarbon feed, classified in class 261, subclass 40.
 - III. Claim 16, drawn to a method for achieving a desirable feed and catalyst contacting condition in a fluid catalytic cracking unit, classified in class 208, subclass 163.
2. Inventions I, II, and III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, the different inventions I, II, and III are drawn to a nozzle assembly, an apparatus for contacting a catalyst and hydrocarbon feed, and a method for achieving a desirable feed and catalyst contacting condition, respectively. Inventions I and II are different in design, mode of operation, and effect because Invention I does not specify a first conduit for supplying regenerated catalyst and a second conduit for receiving regenerated catalyst. Moreover, invention III is different from either of inventions I and II

Art Unit: 1764

because it does not require use of the nozzle assembly of invention I or the apparatus for contacting a catalyst and hydrocarbon feed of invention II.

3. Restriction for examination purposes as indicated is proper because all these inventions listed in this action are independent or distinct for the reasons given above and there would be a serious search and examination burden if restriction were not required because one or more of the following reasons apply:

- (a) the inventions have acquired a separate status in the art in view of their different classification;
- (b) the inventions have acquired a separate status in the art due to their recognized divergent subject matter;
- (c) the inventions require a different field of search (for example, searching different classes/subclasses or electronic resources, or employing different search queries);
- (d) the prior art applicable to one invention would not likely be applicable to another invention;
- (e) the inventions are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a invention to be examined even though the requirement may be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected invention.

If claims are added after the election, applicant must indicate which of these claims are readable upon the elected invention.

Should applicant traverse on the ground that the inventions are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

4. Upon further consideration, Examiner has determined that the search requirement with regard to inventions I and II as detailed *supra* at paragraph 1 are coextensive in scope. Consequently, Examiner withdraws the restriction requirement with respect to Group II, and claim 15 is presently included with claims 1-14 of Group I.

5. During a telephone conversation with William Hickman, attorney for Applicant, on May 31, 2007, a provisional election was made with traverse to prosecute the invention

Art Unit: 1764

of Group I, claims 1-14. Affirmation of this election must be made by applicant in replying to this Office action. Claim 16 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention. Claim 15 is presently included in Group I (see discussion *supra* at paragraph 4), and thus is presently examined along with claims 1-14.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01.

9. With respect to claim 1, the claim is drawn to a "nozzle assembly" that is "located at the bottom of an FCC riser," however the claim elements refer only to the nozzle assembly itself. If such nozzle assembly is to be used in conjunction with a FCC riser as the preamble of claim 1 seems to require, then the nozzle assembly will necessarily need to include means for attaching or connecting the nozzle assembly to the FCC

Art Unit: 1764

riser. Because such elements are not present in claim 1, the claim is incomplete for omitting essential elements.

10. Claims 2, 9, and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11. With respect to claims 2, 9, and 14, a broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

12. With respect to claim 2, the claim recites the broad recitation "5° to 75°", and the claim also recites "10° to 40^[°]" which is the narrower statement of the range/limitation.

13. With respect to claims 9 and 14, the claims recite the broad recitation "two to eight", and the claim also recites "four to six" which is the narrower statement of the range/limitation.

Claim Rejections - 35 USC § 102

14. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

15. Claims 1-7 and 9-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Nielsen (US 4778658).

16. With respect to claim 1, Nielsen discloses a nozzle assembly (152) located at the bottom of a FCC riser (7) comprising: a plurality of feed nozzles (152); and a discharge end of each feed nozzle for ejecting a mixture of hydrocarbon feed and atomization gas into the riser; wherein each nozzle has its axis parallel to the axis of the riser (see Nielsen, Fig. 2) at the bottom, and the discharge ends of the nozzles are canted inwardly towards the axis of the riser at the bottom (see Nielson, Fig. 2).

17. With respect to claim 2, Nielsen discloses wherein the discharge ends are canted at least 5° from their axes (see Nielsen, Fig. 2).

18. With respect to claim 3, Nielsen discloses wherein the apparatus further includes a mechanical connecting means (114) for physically fixing the position of the feed nozzles with respect to each other (see Nielsen, Fig. 2).

19. With respect to claim 4, Nielsen discloses wherein the apparatus further includes a central steam nozzle (106) for supplying steam (see Nielsen, column 7, lines 6-8; and column 10, lines 21-25).

20. With respect to claim 5, Nielsen discloses wherein the apparatus further includes a means (112) for supplying pre-fluidizing gas (see Nielsen, column 7, lines 24-28).
21. With respect to claims 6 and 7, Nielsen discloses wherein the nozzles are arranged equidistant and evenly-spaced around the riser axis (see Nielsen, Fig. 3).
22. With respect to claim 9, Nielsen discloses wherein the number of nozzles is in the range two to eight (see Nielsen, Fig. 3).
23. With respect to claim 10, Nielsen discloses wherein the apparatus further includes a mechanical connecting means (114) for physically fixing the position of the feed nozzles with respect to each other (see Nielsen, Fig. 2).
24. With respect to claim 11, Nielsen discloses wherein the apparatus further includes a central steam nozzle (106) for supplying steam (see Nielsen, column 7, lines 6-8; and column 10, lines 21-25).
25. With respect to claim 12, Nielsen discloses wherein the apparatus further includes a means (112) for supplying pre-fluidizing gas (see Nielsen, column 7, lines 24-28).
26. With respect to claim 13, Nielsen discloses wherein the nozzles are arranged equidistant around the riser axis (see Nielsen, Fig. 3).
27. With respect to claim 14, Nielsen discloses wherein the number of nozzles is in the range two to eight (see Nielsen, Fig. 3).

Claim Rejections - 35 USC § 103

28. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

29. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

30. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

31. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nielsen (US 4778658).

32. With respect to claim 8, Nielsen discloses a nozzle assembly (152) located at the bottom of a FCC riser (7) comprising: a plurality of feed nozzles (152); and a discharge end of each feed nozzle for ejecting a mixture of hydrocarbon feed and atomization gas into the riser; wherein each nozzle has its axis parallel to the axis of the riser (see Nielsen, Fig. 2) at the bottom, and the discharge ends of the nozzles are canted inwardly towards the axis of the riser at the bottom (see Nielson, Fig. 2); and wherein the nozzles are equidistant around the riser axis (see Nielsen, Fig. 3).

Nielsen does not disclose wherein the nozzles are arranged unevenly-spaced in the riser when it is positioned horizontally or inclined.

However, Nielsen explicitly discloses the possibility that parts or elements of his FCC riser nozzle assembly may be rearranged without changing the overall effect or operability of the apparatus (see Nielsen, column 14, lines 10-14). Moreover, the court has generally held that the mere rearrangement of parts of a prior art device does not provide a basis for patentability over the prior art. See MPEP § 2144.04(VI)(C).

Thus, it would have been obvious to the person having ordinary skill in the art at the time the invention was made to provide a nozzle assembly located at the bottom of a FCC riser with the nozzles arranged unevenly-spaced in the riser when positioned horizontally or inclined.

Allowable Subject Matter

33. Claim 15 is allowed.

34. The following is Examiner's statement of reasons for allowance:

With respect to independent claim 15, Nielsen does not disclose or suggest an apparatus for contacting a catalyst and hydrocarbon feed in a fluid catalytic cracking process comprising , in part, "a feed nozzle assembly located within [a] second conduit for supplying a mixture of hydrocarbon feed and steam into [a] catalyst, [the] feed nozzle assembly within [the] second conduit comprising a plurality of feed nozzles, and wherein the axis of each nozzle is parallel to the axis of [the] second conduit at the bottom; [and] wherein each nozzle includes a discharge end canted inwardly toward the axis of [the] second conduit for ejecting [the] hydrocarbon feed and atomization steam therefrom and into [the] second conduit to contact with [a] regenerated catalyst."

Conclusion

35. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Randy Boyer whose telephone number is (571) 272-7113. The examiner can normally be reached Monday through Friday from 8:00 A.M. to 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola, can be reached at (571) 272-1444. The fax number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1764

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RPB



Glenn Caldarola
Supervisory Patent Examiner
Technology Center 1700

Glenn Caldarola
Supervisory Patent Examiner
Technology Center 1700